

## PRACTICE EXERCISES

Algebra 2  
Unit #1  
WS #4

Name the property of real numbers illustrated by each of the following.

1.  $92.5(1) = 92.5$
2.  $\pi(a + b) = \pi a + \pi b$
3.  $-7 + 4 = 4 + (-7)$
4.  $14\sqrt{3}$  is a real number.
5.  $29\pi = \pi \cdot 29$
6.  $(2\sqrt{10}) \cdot \sqrt{3} = 2(\sqrt{10} \cdot \sqrt{3})$
7.  $(-8) + [ -(-8) ] = 0$
8.  $-\sqrt{5} + 0 = -\sqrt{5}$
9.  $\left(\frac{1}{2} + \frac{1}{4}\right) + \left(-\frac{1}{4}\right) = \frac{1}{2} + \left[\frac{1}{4} + \left(-\frac{1}{4}\right)\right]$
10.  $\frac{3}{5} \cdot \frac{5}{3} = 1$
11.  $(-2)(-3) = (-3)(-2)$
12.  $25(2x + 5y) = 50x + 125y$

Decide if each set below is closed under addition, subtraction, multiplication, and division. If not, give a counterexample.

13. {odd integers}
14. {even natural numbers}
15. {rational number}
16. {irrational numbers}

Which of the field properties *do not* hold for each set?

17. whole numbers
18. natural numbers
19. Is the set  $\{0, 1\}$  closed under the operations of multiplication and addition? Which other field properties does it satisfy using the operations of addition and multiplication?
20. Is the set  $\left\{2, 1, \frac{1}{2}\right\}$  closed under multiplication and division?

Name the property that justifies each step in each of the following series of statements.

21.  $3 + 9(2x + 1) = 3 + (18x + 9)$  a. ?  
 $= (3 + 18x) + 9$  b. ?  
 $= (18x + 3) + 9$  c. ?  
 $= 18x + (3 + 9)$  d. ?  
 $= 18x + 12$  e. ?

22.  $(k \cdot 8)\frac{1}{8} + (-3k) = k\left(8 \cdot \frac{1}{8}\right) + (-3k)$  a. ?  
 $= k(1) + (-3k)$  b. ?  
 $= k + (-3k)$  c. ?  
 $= k[1 + (-3)]$  d. ?  
 $= k(-2)$  e. ?  
 $= -2k$  f. ?